66. V. A. 6. - Regarding the implementability of each alternative, EPA does not address whether or how each alternative will be affected by remedial actions already proposed or underway (i.e., the NP OU, the Burbank and North Hollywood OUs, and the Philips Components site in the SP) and how each would affect future remedial actions in the area or in the basin as a whole.

EPA RESPONSE: See EPA Responses to ITT Glendale South OU Comments 48 and 49 above.

67. V. A. 6. - EPA does not address the availability of services and materials. A detailed analysis of each of these factors should be provided in light of the size and complexity of the basin and the cumulative affect of independent remedial actions within the basin.

EPA RESPONSE: EPA disagrees with this comment. Sufficient information was included in the Glendale South OU FS to support EPA cost estimates and decision-making regarding the OU. EPA is not required to estimate the cost or determine the "availability" of every potential element of every potential FS alternative. See EPA responses to similar ITT comments above and to EPA response to ITT Comment 50 of the Glendale North OU Responsiveness Summary (attached).

68. V. A. 6. - Several technologies were dismissed without adequate justification and were not considered further in the FS. For example, resin adsorption was not considered "because resin adsorption has not been tested as widely as activated carbon adsorption and would require treatability studies to develop an optional system".

EPA RESPONSE: See EPA Response to ITT Comment 65 above.

69. V. A. 6. - EPA does not provide sufficient detail of administrative feasibility for the alternatives. The activities that may be "needed to coordinate with other offices and agencies" and the ability and time required to obtain necessary permits and approvals is not addressed. If it is EPA's intention that all treatment will occur onsite, it should be stated in the FS.

EPA RESPONSE: See EPA Response to ITT Comment 52 of the Glendale North OU Responsiveness Summary (attached).

70. V. A. 6. - EPA applies a 20 percent contingency to the O&M costs for the various scenarios which is inappropriate for a large and complex site as costs could be underestimated. Additionally, it is unclear whether sufficient effluent stream and emissions monitoring are included in the O&M scenario costs, especially for delivery to a water purveyor. It is also not clear whether collection, handling, and analysis for all influent and effluent water for the treatment system and monitoring extraction wells all are included in the cost estimates for monthly monitoring. If not,

EPA has underestimated the monitoring costs, especially in the short-term when more frequent monitoring generally is required.

EPA RESPONSE: See EPA Response to ITT Comment 53 of the Glendale North OU Responsiveness Summary (attached).

71. V. A. 6. - The costs appear to assume optional operation of the treatment systems. For example, the liquid-phase and vapor-phase carbon consumption rates appear to assume perfectly exclusive adsorption, which would result in a lower estimate of O&M costs than may result.

EPA RESPONSE: See EPA Response to ITT Comment 53 of the Glendale North OU Responsiveness Summary (attached).

72. V. A. 6. - The FS does not analyze long-term costs because O&M costs are considered only for a 12-year period, which is inadequate. If DNAPL is present in the SP and other sites, O&M periods could be substantially longer. EPA should provide an explanation as to why these costs were not addressed.

EPA RESPONSE: Again, the Glendale South OU is an interim and not a permanent remedy. As an interim action, the Glendale South OU will not meet drinking water standards in the aquifer. Addressing DNAPL contamination was not a remedial objective of the Glendale South OU interim remedy. The long-term effectiveness criterion was used to evaluate the long-term effectiveness with respect to an interim measure not a final cleanup.

Also see EPA Responses to ITT Comments 39, 50 and 56 of the Glendale North OU Responsiveness Summary (attached).

73. V. A. 7. - EPA does not provide support for its conclusory statement that the state would be expected to support Alternatives 6 and 8. Additionally, the FS states that there may be several state concerns regarding Alternatives 2, 3 and 4 but specifically identifies only one. Future analysis and future public comment is not possible if the state raises unanticipated concerns with respect to any of these alternatives.

EPA RESPONSE: As shown in several Administrative Record documents for the Glendale South OU, the State commented on the RI Report for the GSA, EPA's preliminary ARARs analysis, the FS for the Glendale South OU, and the Proposed Plan for the Glendale South OU. In addition to receiving these specific written comments, EPA conducted (and continues to conduct) quarterly management committee meetings with state and local officials to discuss the San Fernando Valley Superfund Project. In several letters and at the meetings, the State has continued to express its support for the Glendale groundwater cleanup. In addition, the proposed remedy for the Glendale South OU is similar to that of the Burbank OU which is currently in remedial design and the State concurred upon and supported that interim remedy. For all of these reasons,

documented in the Administrative Record for the Glendale South OU, the EPA could reasonably expect the State to support the alternatives presented in the FS.

74. V. A. 8. - EPA does not provide support for its conclusory statements that the public is expected to support a particular alternative. For example, with respect to EPA's plan to blend the treated water to reduce nitrate concentration, EPA states that community acceptance is anticipated. Future analysis and future public comment is therefore not possible if the anticipated concerns are raised with respect to the alternatives.

EPA RESPONSE: EPA expects that the community will support the alternatives, with the exception of Alternative 1 - No Action, because each involves the cleanup of groundwater contamination thus protecting human health and the environment. In addition, between 1989 and 1991, EPA held quarterly meetings with a community work group (CWG). The CWG was composed of community members and state and local officials. The CWG expressed its support for the proposed Glendale groundwater cleanup project very early in RI/FS process. Minutes from some of the CWG meetings are included in the Administrative Record for the Glendale South OU. Finally, the public was given 107 days to comment on the RI, FS and Proposed Plan as well as all of the other Administrative Record documents. These comments largely supported EPA's preferred alternative.

75. V. A. 8. - The public acceptance criterion analyses are limited only to the issue of blending of treated groundwater to meet the MCLs for nitrate and disposal of groundwater in the Los Angeles River. Additional public concerns should have been addressed, such as the siting of extraction and treatment facilities, associated rights-of-way, air emission controls, noise, and aesthetics for the facilities. Additionally, EPA has not addressed whether the public will accept the planned distribution of the treated groundwater to the water purveyors for use by the community.

EPA RESPONSE: EPA has actively solicited comment from the community on the Glendale South OU Proposed Plan by conducting a public meeting and by distributing the Proposed Plan in the community. During the public comment period, the public was encouraged to provide comments to EPA on the proposed extraction and treatment facilities as well as other factors associated with Glendale South OU and presented in the documents of the Administrative Record. The purpose of this Responsiveness Summary is to address the concerns and questions the public has regarding the Proposed Plan. In addition, once the engineering design is complete, EPA will issue a fact sheet and provide, if appropriate, a public meeting before the remedial action is commenced.

76. V. B. - EPA must compare the alternatives to assess relative performance of each alternative with respect to each evaluation criterion.

EPA RESPONSE: The level of detail in the Glendale South OU FS comparative analysis (Section 6.3) is appropriate given the limited scope of the interim remedial action for the reasons discussed in EPA responses to several ITT comments above and in EPA Responses to ITT Comments 39 and 50 of the Glendale North OU Responsiveness Summary (attached).

VI. Meaningful Comment on the EPA Documents

77. VI. - ITT asserts that it has been limited in its ability to provide meaningful comment on the EPA Documents for several reasons: 1) ITT was not notified of the availability of the FS and Proposed Plan until the end of November; and 2) the EPA Documents do not include relevant technical information. In particular, groundwater chemistry, aquifer yield and hydraulic testing data should be more comprehensive and should be collected from wells that are distributed spatially. The FS should include more chemical and water level data and more general chemistry data for groundwater, as well as treatability information. EPA fails to give sufficient relevant data and other technical information by which the validity of its conclusions can be evaluated. This lack of information prevents the development of an adequate record for judicial review and inhibits the public in reviewing and commenting on the documents.

EPA RESPONSE: EPA is only required to hold a 30-day public comment period on its proposed plans and the supporting documentation provided in the Administrative Record. However, upon request of the City of Glendale as well as ITT, EPA extended the public comment period 77 additional days through January 19, 1993. In addition, the "EPA documents" which ITT refers to in its comments represent only a small portion of the Administrative Record for the Glendale South OU. In order to review and evaluate all of the data that support the Glendale South OU remedy, ITT must also review the Administrative Record which was available throughout the public comment period and continues to be available at the five San Fernando Valley information repositories (See Appendix A).

78. VI. - The EPA Documents do not identify specific references to ARARs and TBCs. For example, the Documents do not provide specific references to the requirements listed in Section 6.0 and Table 6-5 of the RI. When EPA develops and screens the alternatives in the FS, it fails to identify ARARs and TBCs with any specificity. It is therefore impossible to discern which requirements each of the alternatives must meet, and ITT and other interested parties are deprived of a "reasonable opportunity" to comment on the ARARs and TBCs that the various alternatives will be required to meet.

EPA RESPONSE: Based on this comment, it also appears that ITT failed to consider and review other documents in the Administrative Record. The "EPA documents" referred to by ITT include the RI for the GSA, the Glendale South FS report and the Proposed Plan for the Glendale South OU. However, these three documents represent only

a small portion of the Administrative Record developed to document EPA decisions regarding EPA's preferred alternative for the Glendale South OU interim remedy. The Administrative Record has been and continues to be available for review at the five San Fernando Valley Superfund project information repositories (See Appendix A). The documents presented in the Administrative Record contain data sufficient to support EPA decisions regarding the Glendale South OU interim remedy.

In the RI report for the Glendale Study Area and FS report for the Glendale South OU, EPA identified potential ARARs and TBCs for the Glendale South OU. Final determination of ARARs and TBCs is made in the ROD for the selected remedy. In addition, several documents in the Administrative Record for the Glendale South OU Proposed Plan further identify ARARs for the Glendale South OU. For example, see Glendale South Administrative Record documents 77 and 78 and Glendale North AR documents 266 and 267 (included by reference in the Glendale South AR). These documents are EPA responses to State comments on the Glendale North and South OU Proposed Plans and include ARARs determinations. Again, the "EPA Documents" represent only a small portion of the Administrative Record developed to document EPA decisions regarding EPA's preferred alternative for the Glendale South OU interim remedy. Therefore, the entire Administrative Record must be reviewed to see the complete record on EPA's ARARs determinations and other information pertinent to the RI, FS, and EPA's preferred alternative selection. Also see EPA Responses to ITT Comments 42 and 43 above.

79. VI. - EPA states that the final ARARs will be identified in the Record of Decision (ROD) but the NCP mandates that the agencies identify these requirements no later than the early stages of the comparative analysis. If EPA does not specify ARARs until it completes the ROD, it will fail to comply with the NCP and will prevent opportunity for meaningful comment on the ARARs that are finally selected.

EPA RESPONSE: EPA disagrees with this comment. As stated in previous responses above, EPA identified potential ARARs early in the RI/FS process. As shown in Glendale North OU AR documents 211, 212, 213, 214, 216 and 217 (included by reference in the Glendale South AR), all dated February 1992, EPA made preliminary ARARs determinations available to State agencies for review and comment prior to the completion of the comparative analysis of alternatives and the FS. For EPA's final ARARs determinations for the Glendale South OU, please review Section 10 of the Glendale South OU ROD. Also, see EPA Responses to ITT Comments 42, 43 and 78 above.

VII. Other Issues

80. VII. A. - ITT states that the EPA Documents discount the effects that the presence of DNAPLs would have on the cost and cleanup time estimates and the ultimate effectiveness or

"achievability" of any attempted remediation.

EPA RESPONSE: See EPA Response to ITT Comment 64 of the Glendale North OU Responsiveness Summary (attached).

81. VII. B. - The FS does not consider whether radon and nitrate are naturally occurring or background substances present as a result of pre-industrial activities on the site. If EPA determines that the remedy must address these substances, it must address their sources. If they are a result of pre-industrial on non-industrial activities, the costs for treating these substances should not be considered CERCLA "response costs".

EPA RESPONSE: The nature and extent of metals and radionuclides and how they might effect the Glendale North and South OU interim cleanups are further described in several Administrative Record documents. Including two that are described briefly below.

Metals are discussed in a technical memorandum entitled: Results of Metals Sampling of San Fernando Basin Production Wells (May 17, 1993), also included in Supplement 1 of the Administrative Record for the Glendale South OU. These documents indicate that EPA believes that many of the metals detected in initial sampling of the groundwater of the Glendale Study Area are sampling artifacts and are not likely to impact the Glendale North or South OU interim remedies.

Radon and other radionuclides are also discussed in a technical memorandum entitled: San Fernando Valley Superfund Site, Radionuclides in the Glendale Study Area (March 2, 1993), also included in the Administrative Record for the Glendale South OU. All radionuclides have been found to be in compliance with current MCLs. Radon has been detected above its proposed MCL and potential impacts to worker health and safety with respect to air stripping tower carbon replacement will be considered and addressed during remedial design.

Finally, with respect to nitrate and hazardous substances found in the groundwater of the Glendale South OU area, whether or not a particular contaminant is naturally-occurring or not is not relevant since under the selected remedy the treated water must meet all MCLs, including the nitrate MCL, in order to distribute the treated water to a public water supply system. The costs associated with this interim remedy are necessary costs of response and are to be incurred consistent with the NCP. The issue of the liability of potentially responsible parties for the costs of the remedy will not be addressed in this Responsiveness Summary because it is not relevant to the selection of the remedy.

Also see EPA Response to ITT Comment 59 above.

82. VII. B. - Blending the treated groundwater to lower nitrate levels will raise the cost of the remedy and EPA or the water

purveyor should bear the costs. Nitrate treatment by ion exchange presents issues related to both cost and implementability because of the resulting waste brine from the process which is difficult and costly to dispose of or treat.

EPA RESPONSE: See EPA Response to ITT Comments 58, 59 and 81 above.

83. VII. B. - Radon is a naturally occurring material and its cleanup should not be the responsibility of PRPs. In addition, the radon levels observed in the wells, when blended with the groundwater with concentrations observed in wells below the MCLs, may not pose any risk.

EPA RESPONSE: See EPA Response to ITT Comment 81 above.

84. VII. C. - The FS identifies two potential treatment facility locations but states that the actual location cannot be determined in the FS. No analysis of the feasibility of using these sites is made, including whether the site may have other, more beneficial uses, whether there is sufficient space or access to build a treatment plant, the ability to acquire necessary rights-of-way for the piping installation, or availability of the site over time. For example, the Franciscan Ceramic site (one of two sites proposed for the treatment facility) was under consideration by the Los Angeles Police Department for a training facility, and the Los Angeles Unified School District is interested in the site for a new high school. The EPA Documents do not address these or other issues that may affect the feasibility of either of the potential site locations and the impact that these issues may have on cost.

EPA RESPONSE: See EPA Responses to ITT Comments 51 and 68 of the Glendale North OU Responsiveness Summary (attached).

85. VII. D. - The FS fails to identify or discuss alternatives that may be as or more effective as the Preferred Alternative and/or less costly. EPA should have considered newly available technologies that could significantly improve the remedy's effectiveness or cleanup time. There is no evidence in the FS that EPA did consider such technologies, with the exception of perozone oxidation. If EPA did not consider such technologies, it should explain why it decided that they are not a remedial option.

EPA RESPONSE: See EPA Responses to ITT Comments 51 and 68 of the Glendale North OU Responsiveness Summary (attached).

<u>APPENDIX A: ITT's Specific Technical Comments on the Feasibility Study for the Glendale Study Area South Plume Operable Unit</u>

86. (Appendix A Executive Summary). ITT asserts that the alternative proposed by the SP FS does not meet the FS' stated objective to protect human health and the environment by 1) inhibiting the vertical and areal migration of the contaminated

groundwater to limit degradation of the San Fernando Basin; and 2) to begin to remove contaminants from the upper zone of the aquifer. The alternatives discussed in the FS focus on TCE and PCE, not the COCs contributing significantly to health risks posed by groundwater in the South Plume OU. The risks from TCE and PCE are acceptable as defined by the US EPA and as defined and cited in the FS. In part, the FS incorrectly concluded that "prevalence" -- i.e., chemicals found most commonly in an area -- is an appropriate surrogate for chemicals that pose the greatest health risk. It is not. To meet its stated objective of protecting human health and the environment, the FS must focus on those chemicals that are causing an unacceptable risk. This can only be accomplished by focusing the remedial activities on areas where those chemicals presenting an unacceptable risk are present at unacceptably high concentrations, as defined by the risk assessment. The alternatives in the FS neither address those contaminants nor those areas of the SP which present unacceptable health risks.

The chemicals which drive the health risk are benzene, methylene chloride, arsenic, and naphthalene. The materials are found in "specific industrial sites and are not prevalent throughout the South Plume area." FS at 1-23. The remedial activities should, therefore, focus on these contaminants and these sites. If these industrial sites are to be omitted from the objectives of the SP FS, then they should be eliminated from the risk assessment. If they are eliminated from the risk assessment, the "no-action" alternative must be reconsidered. It is likely that a properly conducted risk assessment in the SP OU, without consideration of the above-referenced chemicals, will indicate that the "no action" alternative is acceptable because the SP would present no significant risk. At a minimum, a more focused remedial plan should be developed that 1) would effectively address the contaminants of concern in the SP that pose an actual risk to health and the environment; and 2) would substantially reduced remedial costs.

EPA RESPONSE: The primary objective of the Glendale South OU FS is to inhibit the further migration of contamination that has already impacted groundwater and to remove contaminant mass from the Glendale South OU area to the extent practicable. As stated in the FS, the most prevalent VOCs are TCE and PCE. Although these compounds may not pose the highest risk of those detected in the Glendale South OU area, TCE and PCE are present at concentrations several orders of magnitude above drinking water standards (i.e., maximum contaminant levels [MCLs]). As the San Fernando Basin provides groundwater supply for the City of Los Angeles as well as other municipalities, the presence of contaminants above MCLs throughout the basin, including the Glendale South OU area, necessitates remedial action on a regional scale.

At present, the Glendale South OU area impacted by contaminated groundwater is approximately 1 square mile. This FS considered remedial alternatives that would address the entire

areal extent of groundwater contamination within this area. It is assumed that source control measures at individual sites will also be required in conjunction with the area-wide remedial action. However, source control was beyond the scope of the Glendale South OU FS and interim remedial action.

Also see EPA response to ITT Comment 2.

87. (FS Pages 1-2 and 1-11) The estimates of VOC mass in the subsurface are based solely on limited groundwater data which is then used to make assumptions on the hypothetical contribution from the dissolved portion of VOCs in the aqueous phase. Given the potential for NAPL in the area and the limited groundwater data, this assumption is inaccurate. While NAPL estimation techniques currently are qualitative at best, the issue is not adequately handled in the text.

EPA acknowledged that the mass calculations do not consider NAPLs, but also acknowledged that if present, "the estimates of total contaminants mass in the aquifer...are potentially significantly underestimated." Presenting the mass estimates as is, is misleading and inaccurate.

EPA RESPONSE: As stated in the previous EPA response, it is assumed that source control measures at individual sites, under the jurisdiction of the Regional Water Quality Control Board (RWQCB) and the California Department of Toxic Substances Control (DTSC), will also be required in conjunction with the area-wide remedial action. Source control was beyond the scope of the South OU FS. Any dense non-aqueous phase liquids (DNAPLs) found in the vicinity of these sites would be addressed as part of these source control measures.

The mass estimates presented in this FS are not intended to provide an estimate of the total mass in the subsurface, but to provide an approximation of the VOC mass already dissolved in the groundwater and sorbed to the soil matrix on an area-wide basis. VOC mass may be present near source areas in the form of DNAPLs. As discussed in the FS (Page 1-11), if DNAPLs are present, the total mass in the subsurface may be underestimated. However, it is assumed that source control measures would be designed to address DNAPLs at individual sites.

88. (FS Pages 1-2) The objectives of the FS are outlined in Section 1. However, as explained throughout these specific and the general comments, the data collected to accomplish these objectives were not sufficient to support an informed risk management decision regarding the remedies proposed in the FS. Furthermore, the data are not sufficient even for characterization purposes over such a large area.

EPA RESPONSE: An informed risk management decision regarding the area-wide groundwater contamination was made on the basis of an

area-wide interpretation of the geology, hydrogeology, and hydrology; the nature and extent of contamination; and the factors affecting the fate and transport of contaminants in the soil-water matrix. Although this interpretation may not be sufficient to address source control issues, it is sufficient for evaluating remedial alternatives that affect area-wide contamination.

89. (FS Table 1.2-1) The Table does not identify "ALL DETECTED CONSTITUENTS IN THE UPPER ZONE RI WELLS FOR THE SOUTH PLUME OU." The chemicals determined to pose the significant health risks are omitted from this table. Benzene, methylene chloride, toluene, ethyl benzene, vinyl chloride and xylene were all identified in the risk assessment as chemicals identified in the upper zone, but were omitted from Table 1.2-1.

EPA RESPONSE: Table 1.2-1 does identify all detected constituents in the Upper Zone RI wells for the Glendale South OU. The Upper Zone RI wells are wells that were installed as part of the regional-scale RI that was conducted to characterize the nature and extent of contamination in the San Fernando Basin. Wells located on specific industrial sites were also used to characterize the nature and extent of groundwater contamination in the South OU area; the constituents detected in these wells are listed in Tables 4-13, 4-16, and 4-19 of the Glendale Study Area RI. Benzene, methylene chloride, toluene, ethyl benzene, vinyl chloride, and xylene were detected in wells located on specific industrial sites. Data from these wells were used in the baseline risk assessment for the Glendale South OU, included in the RI report for the Glendale Study Area.

90. (FS Pages 1-3 and 1-9) To virtually eliminate VOCs from consideration is disingenuous in view of the fact that all of these chemicals were major factors in the RI, particularly in the Risk Assessment. Coupled with EPA's decision to not address source control in the South Plume, this FS is biased toward an area-wide remedy which is not supported by the data.

EPA RESPONSE: See EPA Response to ITT Comment 87.

91. (FS Pages 1-4) The information provided in the RI and the FS do not meet the objectives as stated.

EPA RESPONSE: EPA disagrees with this comment. See EPA Responses to ITT Comments 86, 87 and other ITT Comments above.

92. (FS Pages 1-5 and Page 1-6) There are no references and data on the two wells cited which "clarified" the Raymond fault.

EPA RESPONSE: The two wells are Pollock VPBs: PO-VPB-01 and PO-VPB-03. Please refer to Sections 3 and 5, and Figure 5-21 of the basinwide remedial investigation report: Remedial Investigation of Groundwater Contamination in the San Fernando Valley, dated December 1992 (included in Administrative Record for Glendale

South).

93. (FS Page 1-6) The FS states that three zones are used to define the subsurface sediments in the Glendale South OU area: Upper, Middle and Lower Zones. However, the RI questionably interpolates these zones only through half of the south plume portion of the Glendale Study Area. RI at Figure 3-10. The remaining portion of the area has no zone designation.

EPA RESPONSE: As stated on Page 1-6 of the FS, although the composition of the alluvium in the Glendale South OU area is similar to that of the North Plume OU area, the South OU area does not have four distinct hydrogeologically significant zones as does the Glendale North OU area. In particular, there is no clear distinction between the Upper and Middle Zones in the Glendale South OU area as there is in the Glendale North OU area.

94. (FS Page 1-7) Hydraulic conductivity values are given, but these values were "estimated from lithologic units identified in drillers' well logs and were calibrated in the basin-wide groundwater flow model." Obtaining hydraulic estimates from drillers' logs is a crude practice at best and these estimates should not be used at all in a quantitative fashion. No data are presented to allow evaluation of these calculations. Hydraulic testing must be incorporated to more accurately reflect aquifer material characteristics.

EPA RESPONSE: A regional interpretation of the geology and hydrogeology has been developed and documented in the San Fernando Valley Remedial Investigation of Groundwater Contamination in the San Fernando Valley (available in the Glendale South OU AR Supplement 1). This regional interpretation is based on data collected as part of the basin-wide RI as well as historical data, including aquifer test data from various locations throughout the basin. Transmissivity and hydraulic conductivity values used in the modeling effort were based on this interpretation.

95. (FS Page 1-8) If these are the only data points, it further evidences the extremely limited information and emphasizes the problems with the conclusions drawn.

EPA RESPONSE: See EPA Responses to ITT Comments 86 and 88.

96. (Table 1.2-3) Apparent typos in this table add to the difficulty in reviewing this document because they force readers to guess or make assumptions on what may be intended, which may not be accurate, and hence can lead to mistakes. For example, several "average" values are less than the "range" values.

EPA RESPONSE: The average value for bicarbonate should be 251 mg/l.

97. (FS Pages 1-10 and 1-11) Without a time dimension, simply stating the volume of contaminated water as that volume which the VOCs now occupy is very misleading. Also, there are virtually no data presented to support the conclusions.

EPA RESPONSE: The initial masses of TCE and PCE were calculated from the contaminant distributions dated September to October, 1990, as shown in Figures 1.2-3 to 1.2-6.

98. (FS Pages 1-11 and Table 1.2-5) The various calculations for the masses and distribution of TCE and PCE in the area are gross estimates considering the extremely limited amount of data points. Additional data points in the area need to be collected before a meaningful evaluation can be completed.

EPA RESPONSE: See EPA Responses to ITT Comments 86 and 87.

99. (Table 1.2-5) It appears that an inordinate amount of effort (and text) is devoted to estimating the mass of these compounds when the underlying assumptions (limited data and lack of NAPL residual) are extremely misleading.

EPA RESPONSE: See EPA Responses to ITT Comments 86 and 87.

100. (FS Page 1-11) It is unclear how the percentages of contaminated aquifer thicknesses were assigned. These designations of 30 and 70 percent appear to be arbitrary.

EPA RESPONSE: See EPA Responses to ITT Comments 86 and 87.

101. (FS Page 1-12 and Table 1.2-6) It is unclear why the Priority Pollutant Metals are included as COCs.

EPA RESPONSE: The metals listed in Table 1.2-6 were individually determined to pose elevated risk based on the results of the baseline risk assessment for the South OU, presented in the Glendale Study Area RI.

102. (FS Page 1-16) Reference citations for the range of f_{OC} values used for this effort (0.0001 to 0.0005 for similar geologic formations in Southern California) should be provided.

EPA RESPONSE: The appropriate reference is CH2M Hill (1990), Fraction of Organic Carbon in the San Fernando Basin Memorandum, Emeryville, California, October 1990, included in the Glendale South OU Administrative Record.

103. (FS Page 1-18) The use of a two-dimensional model for solute transport does not adequately model the Glendale Study Area. In addition, due to the sparse well control for the basin, the model is extremely simplistic, should not be over interpreted, and should be used for no more than a planning tool, and certainly should not be used for the purposes it is used for here. Decisions based on

the model need to be evaluated very carefully, because as stated, the Glendale Study Area appears to be more complex than other areas of the SFV NPL area.

EPA RESPONSE: The 3-D, calibrated, basin-wide, groundwater flow model was used to calculate groundwater flow velocities. The solute transport model developed for the Glendale Study Area simulated contaminant transport in the top layer of the 3-D, basin-wide flow model. Therefore, the contaminant transport model includes the 3-D effects on solute transport. The model was designed to be used as a planning tool only. The next stage of evaluation of extraction options should involve field evaluation of the proposed remedial alternatives. This type of evaluation was outside the scope of the South OU FS.

104. (FS Pages 1-18 and 1-19) ITT states that the model estimates developed were based on an extremely limited amount of available data. ITT further asserts that while all of the FS's assumptions are questionable given the lack of data, the generation of modeled results with such a limited input database is inadequate, inaccurate and misleading. The model in its current form should be used for no more than [solely as] a planning tool; this acknowledgment should appear in the text and currently does not.

EPA RESPONSE: EPA disagrees with this comment. See EPA Responses to ITT Comments 94 and 103.

In addition, the database used in developing the flow model for the Glendale Study Area incorporates all data collected as part of the San Fernando Valley RI as well as other investigations conducted throughout the basin. The model was designed to develop and evaluate groundwater extraction scenarios that would achieve the two primary objectives of the Glendale South OU interim action: 1) inhibition of further contaminant migration and 2) contaminant mass removal. Additional modeling may be performed during the remedial design phase of the interim remedy.

105. (FS Page 1-20) The summary cites that the purpose of the baseline risk assessment is to evaluate the potential human health risks associated with the "no action" alternative. The risk assessment in the RI addresses all of the chemicals found in the SP while the FS does not address several areas within the SP (specific industrial areas) nor does it address those chemicals associated with these areas. The risk assessment must address the same chemicals and areas as addressed in the FS. As the chemicals associated with these omitted specific industrial areas are the primary sources of the risk in the risk assessment, the risk assessment must be redone without these chemicals and the "no action" alternative must be reconsidered.

Addressing the "no action" alternative is not the only purpose of the baseline risk assessment. It is also used to establish chemicals of concern, to identify pathways associated with excess

risk and to determine ARARs to be utilized in developing the remedial objectives for the FS. The risk assessment also identifies the areas (sources) which present excess risk and require remediation or risk management attention. If the materials ignored in the remedial alternatives were also ignored in the risk assessment, the "no action" alternative would be the most likely option.

The summary of the baseline risk assessment states that it utilizes the water quality information from the same wells as were used in the site characterization. However, unlike the RI, the risk assessment does not take into account the spatial and temporal distribution of the contaminants and the total mass of the contaminants. Rather, the risk assessment incorrectly applies a simple statistical average (in lieu of more appropriate methods which incorporate spatial and temporal data) and, in doing so, loses information on the location of chemicals and their distribution. The risk assessment is deficient in its treatment, interpretation and utilization of the data.

EPA RESPONSE: EPA disagrees with this comment. See EPA Response to ITT Comment 86.

In addition, the risk assessment (RA) for the Glendale Study Area RI was performed according to USEPA 1989 guidelines and the USEPA Region IX recommendations (USEPA, 1989). It includes the basic components outlined in the guidance as follows: introduction, identification of compounds of potential concern, exposure assessment, toxicity assessment, risk characterization, uncertainties, and ecological assessment. The level of effort used to conduct this assessment was reviewed and was deemed appropriate by State and Federal regulatory agencies (USEPA, Cal-EPA) for adequate characterization of the potential risk via exposure to groundwater at this site.

The steps taken to perform the risk characterization for the Glendale South OU are described in Section 8.0 of the Glendale Study Area RI. The methodology presented is "as per guidance" for carcinogens and non-carcinogens and calculates a lifetime probability of cancer risk (exposure dose times USEPA slope factor) and hazard index (exposure dose divided by USEPA risk reference dose).

The extent of the data collected for groundwater was deemed adequate to define the plume on a regional scale and was deemed of sufficient quality for use in this RA, as per USEPA guidance on data usability (USEPA, 1990).

Initial review of the data collected indicated the primary pathway of concern to be elevated concentrations in groundwater. Therefore, the exposure assessment focused on this identification and characterization (qualitative and quantitative) of the potential risk via this exposure pathway. Current and most likely

future exposures were characterized.

The most current groundwater sampling at the time of the RI production was used to create the RA database and the most current toxicity values for compounds of concern as per the USEPA IRIS database (1991) and the USEPA HEAST document (1991) were used in the quantitative risk calculations.

The arithmetic mean, the reasonable maximum exposure and maximum exposure estimates were all calculated and used in the characterization and evaluation of risks for the RA.

The site-specific uncertainties, as well as uncertainties inherent in the general RA guidance methodology, were described and evaluated in Section 8.0 of the RI. Determination as to the under- or over-estimation of risk is presented.

In summary, standard USEPA RA guidance was used to focus the baseline RA for the Glendale South OU resulting in an adequate characterization of the risks posed by elevated concentration of compounds in groundwater.

106. (FS Page 1-21) The risk assessment identifies the potential COCs in Table 1.2-6 which includes antimony, beryllium, nickel and zinc. These same materials are not included in the risk assessment. ITT asserts that according to EPA guidance, their exclusion is not proper or correct and could substantively alter the conclusions regarding appropriate treatment technology and the relative responsibility of the PRPs for remedial costs.

The exposure assessment is incomplete because it does not identify complete pathways, it misidentifies a source as a pathway, it does not identify an exposure point, and it ignores the fate and transport of materials from the source to the exposure point. The exposure assessment further errs by not incorporating the spatial, temporal and mass data, as referenced above at Page 1-20. The considerations are critical for the proper evaluation of exposure. Exposure is a function of both time and amount; therefore, doses are written in units of mass per unit of time (i.e., mg/day). By incorrectly assuming that the "aquifer" was the point of exposure rather than selecting a definable point of exposure (i.e., a well location), the report does not account for movement (fate and transport) of the material to and past the exposure point. If there is inadequate mass of material to allow for a 70 year exposure, then the lifetime exposure estimate is too high. Similarly, if the concentration of the material decreases with time, then the exposure is also overestimated. Lastly, critical information regarding the site areas that actually represent a health risk are not identified and, therefore, an appropriate remedial strategy cannot be identified. The risk assessment should utilize an appropriate model to estimate the concentrations that could reach either a hypothetical or actual drinking water well, to determine the changes in concentration with time.